Michigan Department of Natural Resources and Environment
Office of Pollution Prevention and Compliance Assistance
Environmental Assistance Program

Michigan Gasoline Station Owners and Tanker Truck Drivers:

What You Should Know About Vapor Balance Systems

2nd Edition

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Michigan Department of Natural Resources and Environment
• **www.michigan.gov/deq** • 800-662-9278

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McKINLEY TRUCKING

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Michigan Department of AGRICULTURE

PEI PETROLEUM EQUIPMENT INSTITUTE

American Petroleum Institute

SSDA Service Station Dealers Association Michigan

MPA MACS

OPW A DOVER COMPANY

MTA MICHIGAN TRUCKING ASSOCIATION

The “What You Should Know About Vapor Balance Systems” guidebook was developed in March 2010 by the Michigan Department of Natural Resources and Environment’s Environmental Assistance Program. It is intended for guidance and compliance assistance purposes only and may be impacted by changes in legislation, rules, and regulations adopted after the date of publication.

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INTRODUCTION

The Michigan Department of Natural Resources and Environment (DNRE), Environmental Assistance Program developed this guide in conjunction with the DNRE's Air Quality Division, and the Michigan Department of Agriculture (MDA). It is designed to help owners/managers of retail gasoline stations and facilities servicing fleets, and tanker truck drivers understand existing DNRE rules and the MDA act, both of which became effective in the 1980's. The guide also explains a recently promulgated federal rule. These state and federal requirements pertain to Stage I vapor balance systems that reduce the emission of air pollutants during the loading of gasoline storage tanks. The new federal rule is far more encompassing than the existing state requirements and thus the focus of this document is on the federal rule. The federal rule applies to all gasoline dispensing facilities in Michigan and throughout the U.S.; whereas the state requirements apply to facilities located in specific Michigan counties and metropolitan areas. The federal rule also requires testing, notifications, recordkeeping, and reporting. Michigan gasoline dispensing facilities must operate in compliance with both the state and federal requirements.

This guide, along with other helpful information, may be accessed at **www.michigan.gov/deqenvassistance**. Scroll down to and select "Clean Air Assistance" under "Related Links," and then select "Gasoline Dispensing Facilities" under "Federal Regulations."

WHAT IS A STAGE I VAPOR BALANCE SYSTEM?

In the simplest of terms, a Stage I vapor balance system transfers vapors from a storage tank being filled with gasoline to the tanker truck that is being emptied. During loading, the vapors travel through a hose that connects the storage tank to the tanker truck, as opposed to escaping through the storage tank vent pipe and into the atmosphere when a vapor balance system is not connected. The tanker truck returns the vapors to the terminal where they can be recovered as gasoline.

A Stage II vapor balance system collects gasoline vapor from a vehicle's fuel tank while the customer fills up at the pump. The state requirements and the new federal rule do not require Stage II vapor balance systems.

WHY IS VAPOR BALANCE SO VALUABLE?

Gasoline is a valuable commodity. Gasoline vapors lead to the formation of ground level ozone, an air pollutant that triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis. Vapor balance captures an amount of vapor equivalent to 10-15 gallons of gasoline each time a tanker truck unloads[1]. Annually, that amounts to 5 million gallons of gasoline that potentially could be recovered in Michigan, or in other words, 37.5 million pounds (18,750 tons) of volatile organic compounds (VOCs) not emitted into the air[2].

In addition, it is estimated the implementation of the new federal rule will further reduce VOCs by 50,000 tons per year nationally, which is equivalent to capturing 13 million gallons of gasoline/year[3].

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1. Petroleum Equipment Institute, December 1992, Keeping It Clean: Making Safe and Spill-Free Motor Fuel Deliveries.
2. Based on data from Michigan Department of Treasury, Motor Fuel Division – approximately five billion gallons of gasoline each year is delivered to Michigan gasoline stations, an average load of gasoline is 10,000 gallons, and vapor balance is responsible for recovering 10 gallons of gasoline vapor per load.
3. U.S. Environmental Protection Agency - Office of Air Quality Planning & Standards, "Summary of Regulations Controlling Air Emissions from Gasoline Dispensing Facilities Brochure," April 2008.

Vapor Balance:

- Increases Profits
- Reduces Ozone Pollution
- Reduces Cancer Risk
- Saves Gasoline and Energy Resources
- Reduces Fire Hazards
- Reduces Gasoline Odors

WHAT ARE THE TYPES OF VAPOR BALANCE CONNECTIONS?

Stage I vapor balance connections can be either coaxial, two-point (dual-point), or manifold.

Coaxial

A coaxial connection has only one tank opening and allows vapor and fuel to flow through a single fill pipe. A three-inch diameter fuel drop tube is inserted into a four-inch diameter fill pipe. Gasoline flows downward through the drop tube while the vapors flow upward between the fill pipe and drop tube. A coaxial drop elbow connects to the fill pipe which allows vapors to travel though the hose and into the tanker truck. Coaxial connections are usually found on older tank installations. (See Figure 1)

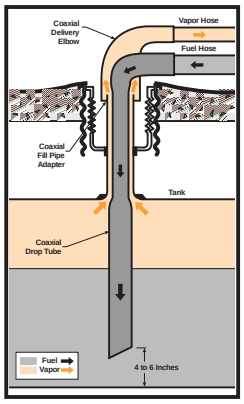


FIGURE 1.Coaxial Stage I vapor balance systems use a drop tube with a narrow top section to create a vapor pathway between the drop tube and the fill pipe. A special coaxial delivery elbow must be used to complete the fuel and vapor pathways to the fuel-delivery truck. Reproduced courtesy of the Petroleum Equipment Institute (PEI), May 2006.

Two-Point (Dual-Point)

A two-point connection consists of two separate tank openings, usually a few feet away from one another. One opening is for delivery of the fuel and the other for the release of vapors back into the tanker truck. The vapor balance adaptor should be equipped with a spring-operated, ring shaped poppet designed to join with a vapor delivery elbow. (See Figure 2) The vapor balance adaptor keeps vapors from escaping when the tank is not being filled. Never tamper with the vapor balance adaptor. Tampering would allow vapors to be released at ground level during the filling of the tank therefore increasing the potential for an explosion. (See Figure 3)

FIGURE 2. Required poppet vapor balance adaptor. Reproduced courtesy of OPW, May 2006.

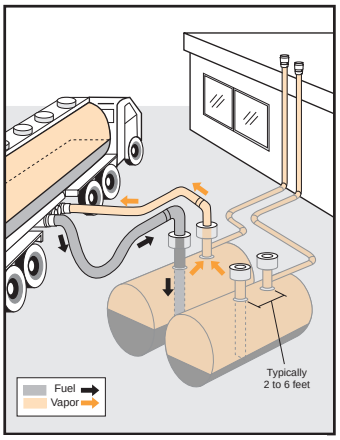


FIGURE 3. Two-point Stage I vapor balance systems use two separate tank risers, one for fuel delivery into the tank and one for the vapor transfer to the fuel-delivery truck. Each tank is equipped with its own vapor riser. Reproduced courtesy of the PEI, May 2006.

Manifold
In a manifold connection, the vent pipes of the tanks are connected. This allows for more than one underground storage tank to be loaded at a time and the vapors recovered through one vapor recovery pipe. (See Figure 4)

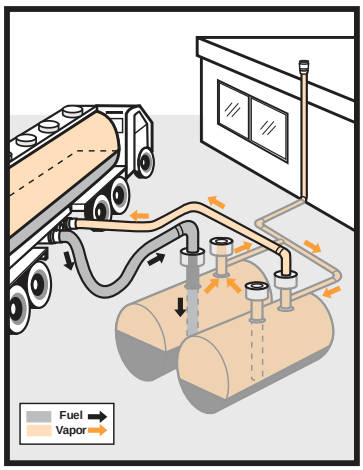


FIGURE 4. Manifold Stage I vapor balance allows a single vapor hose connection point to be used for all the gasoline tanks at a facility. Reproduced courtesy of the PEI, May 2006.

FEDERAL VAPOR BALANCE RULE

One of the goals of the federal Clean Air Act is to reduce the emission of hazardous air pollutants (HAPs). The reduction of HAPs is achieved through the promulgation of and compliance with emission standards for categories of sources that emit HAPs. The U.S. Environmental Protection Agency (USEPA) identified 30 HAPs that pose the greatest threat to public health in urban areas. USEPA has identified categories of area sources (small emitters of HAPs) that account for 90% of the releases of the 30 urban HAPs and are now promulgating standards to reduce the emissions of the urban HAPS. These federal standards are referred to as the National Emission Standards for Hazardous Air Pollutants (NESHAP).

The NESHAP for Gasoline Dispensing Facilities at Area Sources regulates gasoline loading of storage tanks at gasoline dispensing facilities (GDFs). Both the GDF owner and tanker truck driver delivering the product have responsibilities to meet under this NESHAP.

The final NESHAP is found in the Federal Register notice published January 10, 2008 (pages 1945-1953). The NESHAP can be found at www.epa.gov/ttn/atw/area/fr10ja08.pdf. The notice is published in Title 40, Part 63, Subpart CCCCCC of the Code of Federal Regulations (40 CFR 63). To assist you in cross-referencing the Federal Register notice, sections of Subpart CCCCCC are identified throughout this guide (e.g. §63.11120). Corrections and amendments to the NESHAP appeared in the Federal Register on March 7, 2008, and June 25, 2008, respectively. On December 15, 2009, USEPA proposed new amendments and clarifications to the final rule. Those changes are identified in shaded boxes located throughout this document.

The following discussion of the NESHAP begins with who is subject. This is followed by an explanation of the emission limitations and management practices; testing, monitoring, notifications, recordkeeping, and reporting requirements; and their respective compliance dates. Where appropriate, information about the Michigan vapor balance requirements are incorporated into the discussion. This document is to be used only as a guide and not a substitute for reading and understanding the federal and state vapor balance requirements.

WHO IS SUBJECT TO THE NESHAP?

The NESHAP applies to all **gasoline dispensing facilities** in the country that are **area sources**.

A **gasoline dispensing facility** (GDF) is a facility that dispenses **gasoline** into a fuel tank of a motor vehicle. This includes all retail gasoline stations and many fleet vehicle refueling centers.

According to the December 15, 2009, proposed rules, a **gasoline dispensing facility** (GDF) means any stationary facility which dispenses gasoline into the fuel tank of a motor vehicle, motor vehicle engine, nonroad vehicle, or nonroad engine, including a nonroad vehicle or nonroad engine used solely for competition. These facilities include, but are not limited to, facilities that dispense gasoline into on- and off-road, street, or highway motor vehicles, lawn equipment, boats, test engines, landscaping equipment, generators, pumps, and other gasoline-fueled engines and equipment.

Gasoline is defined as any petroleum distillate or petroleum distillate/alcohol blend having a Reid vapor pressure of 27.6 kilopascals or greater which is used as a fuel for internal combustion engines. According to this definition, E85 and E10 are considered gasoline.

An **area source** is a facility that has the potential to emit less than 10 tons per year of a single hazardous air pollutant (HAP) and less than 25 tons per year of any combination of HAPs. If a facility emits more than these amounts, it is a major source. If a facility is a major source and they operate a gasoline dispensing facility (GDF) onsite for the refueling of vehicles, the GDF is not subject to this rule.

The NESHAP does not apply to the loading of aviation gasoline storage tanks at airports. According to the December 15, 2009, proposed rules, the subsequent transfer of the aviation gasoline within the airport is not subject to the NESHAP.

The requirements you must comply with depend on your monthly throughput of gasoline. The higher the throughput, the more requirements you need to comply with. According to the December 15, 2009, proposed rules, if your throughput ever exceeds the throughput threshold, you will be subject to the applicable requirements even if your throughput later falls below the threshold.

DEFINITIONS OF NEW AND EXISTING SOURCES

The date by which you should be in compliance with the requirements depends on whether your GDF is considered an "**existing**," "**new**," or "**reconstructed**" source.

An existing source is one that started construction on or before November 9, 2006.

A new source is one that started construction after November 9, 2006.

A reconstructed source is an existing source that sometime after November 9, 2006, replaces components to such an extent that the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable new source. When making the determination of reconstruction, the costs associated with the new components should only pertain to the vapor balance system which is composed of the gasoline storage tanks, piping including vents, and dispensing pumps. Therefore, the costs associated with new concrete, landscaping and changes to the retail store would not enter into the determination of reconstruction.

DEFINITION OF MONTHLY THROUGHPUT

The monthly throughput is calculated by summing the volume of gasoline loaded into, or dispensed from, all gasoline storage tanks at each GDF during the current day, plus the total volume of gasoline loaded into, or dispensed from, all gasoline storage tanks at each GDF during the previous 364 days, and then dividing that sum by 12.

EMISSION LIMITATIONS AND MANAGEMENT PRACTICES (§63.1116- 63.1118)

The emission limitations and management practices are specific to the GDF's monthly gasoline throughput. The higher the throughput, the more requirements you need to comply with.

GDFs with a monthly gasoline throughput of less than 10,000 gallons (§63.11116):

Do the following:

Condition 1 - Minimize spills.
Condition 2 - Clean up spills expeditiously.
Condition 3 - Cover gasoline containers and storage tank fill pipes with gasketed seals.
Condition 4 - Minimize gasoline sent to open collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

GDFs with a monthly gasoline throughput of 10,000 gallons or more and less than 100,000 gallons (§63.11117):

Complete Conditions 1 through 4 above and Condition 5 below:

Condition 5 - According to the NESHAP, all of your gasoline storage tanks with a capacity of 250 gallons or more must be equipped with submerged fill pipes. If you installed submerged fill pipes on or before November 9, 2006, they must be no more than 12 inches from the bottom of the storage tank. If they were installed after November 9, 2006, they must be within six inches of the bottom of the tank. GDF storage tanks with a capacity of less than 250 gallons still must comply with Conditions 1 through 4.

According to the December 15, 2009, proposed rule changes, the submerged fill pipe measurement should be made from the point in the opening of the pipe that is the greatest distance from the bottom of the tank. Also, submerged pipes not meeting the specifications in Condition 5 are allowed if the owner/operator can demonstrate that the liquid level in the tank is always above the entire opening of the fill pipe. Documentation showing this demonstration must be provided to the inspector during the course of a site visit.

State Requirement Discussion:

All Michigan GDFs should already be in compliance with Condition 5 because the DNRE rules require submerged filling with a discharge that is no more than six inches from the bottom of the storage tank.[4] GDFs had to be in compliance with the submerged fill requirement starting on June 30, 1981.

4. Reference Michigan Air Pollution Control Rule 606.

GDFs with a monthly gasoline throughput of 100,000 gallons or more (§63.11118):

Complete Conditions 1 through 5 above and comply with Condition 6, 7, or 8 described below. Note that the following vapor balance requirements do not apply to gasoline storage tanks installed on or before January 10, 2008, with a capacity less than 2,000 gallons; or tanks installed after January 10, 2008, with a capacity less than 250 gallons.

Condition 6 – If prior to January 10, 2008, your GDF is subject to and has been operating in compliance with one of Michigan's vapor balance requirements (which requires the system to achieve an emission reduction of at least 90%), your GDF is considered in compliance with this section of the NESHAP. The Michigan's vapor balance requirements are explained on pages 14-18.

Condition 7 - Comply with all of the following management practices listed in Table 1:

Table 1 – Management Practices

Install and operate a vapor balance system on your gasoline storage tanks that meets the design criteria in paragraphs (a) through (i).

a) All vapor connections and lines on the storage tank shall be equipped with closures that seal upon disconnect.

b) The vapor line from the storage tank to tanker truck shall be vapor-tight which is defined as no loss of vapors.

c) The vapor balance system shall be designed such that the pressure in the tanker truck does not exceed 18 inches of water pressure or 5.9 inches water vacuum during product transfer.

d) The vapor recovery and product adaptors, and the method of connection with the delivery elbow, shall be designed to prevent the over-tightening or loosening of fittings during normal delivery operations.

e) If a gauge well separate from the fill tube is used, it shall be provided with a submerged drop tube. If you installed submerged fill pipes on or before November 9, 2006, they must be no more than 12 inches from the bottom of the storage tank. If they were installed after November 9, 2006, they must be within 6 inches of the bottom of the tank.

f) Use vapor tight caps for all liquid fill connections.

g) Pressure/vacuum (PV) vent valves shall be installed on the storage tank vent pipes. The pressure specifications for PV vent valves shall be: a positive pressure setting of 2.5 to 6.0 inches of water and a negative pressure setting of 6.0 to 10.0 inches of water. The total leak rate of all PV vent valves at an affected facility, including connections, shall not exceed 0.17 cubic foot per hour at a pressure of 2.0 inches of water and 0.63 cubic foot per hour at a vacuum of 4 inches of water.

h) The vapor balance system shall be capable of meeting the static pressure performance requirement of the following equation:

$$Pf = 2e^{-500.887/v}$$

Where:

Pf = Minimum allowable final pressure, inches of water.
v = Total ullage affected by the test, gallons.
e = Dimensionless constant equal to approximately 2.718.
2 = The initial pressure, inches of water.

i) If construction of the storage tank commenced on or before November 9, 2006, it can have either a coaxial or dual-point vapor balance system. If construction of the storage tank commenced after November 9, 2006, at existing, new, or reconstructed sources, then the tank must be equipped with a dual-point vapor balance system.

Condition 8 - Install and operate a vapor balance system that achieves a 95% emission reduction or better.

State Requirement Discussion:

GDFs with a monthly gasoline throughput of 100,000 gallons or more that are not subject to Michigan vapor balance system requirements, or are subject but the startup of the GDF occurred on or after January 10, 2008, must comply with either Condition 7 or 8. If your GDF is not subject to Condition 6, 7, or 8 because its monthly throughput is less than 100,000 gallons of gasoline, it could still be subject to the vapor balance requirements in the DNRE rule or MDA act. An explanation of these requirements is located on pages 14-18 of this document.

Compliance Dates

For existing sources, compliance with the Emission Limitations and Management Practices of the NESHAP must be achieved by January 10, 2011. New or reconstructed sources complying with Condition 7 that started up from November 9, 2006 to September 23, 2008, have a compliance date of September 23, 2008. New or reconstructed sources not complying with Condition 7 that started up before January 10, 2008, had a compliance date of January 10, 2008. All other new and reconstructed sources must in compliance upon startup. If you have an existing source that becomes subject due to an increase in the GDF's monthly throughput, you have no later than three years after your GDF met the monthly throughput threshold (§63.11113(c)) to comply.

TESTING AND MONITORING (§63.11120)

GDFs with a monthly gasoline throughput of less than 100,000 gallons are not subject to testing and therefore are not subject to §63.11120. Those GDFs with a monthly throughput of 100,000 gallons of gasoline or more complying with either Condition 7 or 8 are subject to testing and monitoring as outlined below. GDFs complying with Condition 6 (i.e., subject to and meeting state vapor balance requirements prior to January 10, 2008) are not subject to testing or monitoring.

GDFs complying with the vapor balance requirements in Condition 7 must:

1) Demonstrate compliance with the cracking pressure and leak rate requirements specified in item (g) of Table 1 for pressure/vacuum vent valves installed on storage tanks. Use the following test method: California Air Resource Board Vapor Recovery Test Procedure TP – 201.1E "Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves" or an alternative test method in accordance with §63.7(f).

2) Demonstrate compliance with the static pressure performance requirement identified in item (h) of Table 1 for your vapor balance systems. Use the following test method: California Air Resource Board Vapor Recovery Test Procedure TP – 201.3 "Determination of two-inch WC Static Pressure Performance of Vapor Recovery Systems" of Dispensing Facilities or an alternative method in accordance with §63.7(f).

GDFs complying with the vapor balance requirements in Condition 8 must:

3) Conduct an initial performance test to demonstrate that the vapor balance system achieves a 95 percent reduction using the California Air Resource Board Vapor Recovery Test Procedure TP – 201.1 "Volumetric Efficiency for Phase I Vapor Recovery Systems."
4) During the initial performance test, determine and document alternative acceptable values for the cracking pressure and leak rate requirements found in item (g) of Table 1.
5) Conduct the tests in (1) and (2) above.

Compliance Dates

For existing, new, and reconstructed sources, the initial cracking pressure and leak rate tests on the PV vent valves, and static pressure test on the gasoline storage tanks must be performed at the time of installation of the vapor balance system and every three years thereafter (§63.11120(a) & (b)).

The December 15, 2009 proposed rules extends the testing deadline to July 9, 2011 for existing sources that have vapor balance systems installed on or before December 15, 2009. For vapor balance systems at existing sources installed after December 15, 2009, the tanks must be tested upon installation of the complete vapor balance system.

NOTIFICATION REQUIREMENTS

The NESHAP requires some GDFs to submit the following notifications:

1) Initial notification identifying basic information about the facility.
2) Notification of compliance status with the requirements of the NESHAP.
3) Notification of performance testing.

GDFs with monthly gasoline throughputs of less than 10,000 gallons:

Not subject to the initial notification, notification of compliance status, or notification of performance testing requirements.

GDFs with a monthly gasoline throughput of 10,000 gallons or more and less than 100,000 gallons:

Are required to submit an initial notification and notification of compliance status unless your GDF was complying with the submerged fill pipe requirements contained in the DNRE rules before January 10, 2008. According to the DNRE rules, all Michigan GDFs must install submerged fill pipes that are within six inches from the bottom of the tank. The notification of performance testing is not required.

GDFs with a monthly gasoline throughput of 100,000 gallons or more:

The initial notification and notification of compliance status do not need to be submitted as long as your GDF was complying with the vapor balance system requirements contained in the DNRE or MDA rules before January 10, 2008 (i.e., Condition 6).

Both the initial notification and notification of compliance status are required for GDFs not subject to a state vapor balance system requirement or GDFs who are complying with the state vapor balance system requirements but whose startup occurred on or after January 10, 2008.

If you are complying with Condition 7 or 8, you must submit a notification of performance testing to the USEPA no later than 60 days prior to conducting the initial tests. If you are complying with Condition 6, no testing or notification of performance testing is required.

Compliance Dates

The initial notification was due by May 9, 2008, or is due at the time your GDF becomes subject to the control requirements, whichever is later. The notification of compliance status for existing sources is due on

January 10, 2011. For new or reconstructed sources, your notification of compliance is due at the time you are required to be in compliance with the Emission Limitations and Management Practices.

The December 15, 2009, proposed rule provides more time for the submittal of the notification of compliance. GDFs whose monthly gasoline throughput is between 10,000 and 100,000 gallons, have 60 days from the date required to be in compliance with the NESHAP. For existing sources, that would be March 11, 2011. For new sources, the deadline is 60 days from startup.

Existing sources whose monthly throughput is 100,000 gallons or more and complying with Conditions 7 or 8, have until September 7, 2011, to submit the notification of compliance if the vapor balance systems were installed on or before December 15, 2009. If the vapor balance systems were installed after December 15, 2009, notification must be submitted within 60 days from the complete installation of the vapor balance system.

New sources with a monthly throughput of 100,000 gallons or more have to submit their notification of compliance within 60 days of conducting their initial performance tests. Tests must be conducted upon complete installation of the vapor balance system.

The DNRE's Environmental Assistance Program (EAP) has developed an initial notification and notification of compliance status form, and a notification of performance testing form that you can use to comply with these requirements. For an electronic copy, go to **www.michigan.gov/deqenvassistance**. Scroll down and select "Clean Air Assistance" under "Related Links" and then select "Gasoline Distribution Facilities'" under "Federal Regulations." You can also call the EAP at 800-662-9278.

RECORDKEEPING REQUIREMENTS

GDFs with monthly gasoline throughputs of less than 100,000 gallons:

Records documenting your monthly gasoline throughput must be available to the USEPA within 24 hours of a request.

Compliance Dates

- For existing sources, compliance with the recordkeeping requirements must begin by January 10, 2011.
- For new sources, records must be kept beginning January 10, 2008. If you are starting up a new GDF after January 10, 2008, your compliance date is the date you start up the GDF.

According to the December 15, 2009 proposed rules, for new or reconstructed sources, recordkeeping must begin upon startup of the GDF. For existing sources, recordkeeping must begin on January 10, 2008.

GDFs with a monthly gasoline throughput of 100,000 gallons or more:

Keep records of all tests conducted. Keep records for a period of five years and make them available for inspection by the USEPA during a site inspection.

REPORTING

There are no reporting requirements for GDFs with monthly gasoline throughputs of less than 100,000 gallons.

GDFs with a monthly gasoline throughput of 100,000 gallons or more:

Reports generated from the required performance testing must be submitted to USEPA at the following address:

USEPA Region 5
Compliance Tracker (AE-17J)
77 West Jackson Blvd.
Chicago, IL 60604

Compliance Date

Reports must be submitted within 180 days of the completion of the performance testing. (§63.11126)

TANKER TRUCK REQUIREMENTS

If a tanker truck is unloading at a GDF with a monthly throughput of 100,000 gallons or more, the tanker truck must:

- Make sure all hoses in the vapor balance system are properly connected;
- The adaptors or couplers that are attached to the vapor line on the storage tank have closures that seal upon disconnect;
- All vapor return hoses, couplers, and adaptors used in the gasoline delivery are vapor-tight;
- All tanker truck vapor balance equipment is compatible in size, and forms a vapor-tight connection with the vapor balance equipment on the GDF storage tank; and
- All hatches on the tanker truck are closed and securely fastened.
- Filling of the storage tanks at the GDF is limited to unloading by vapor-tight gasoline tanker trucks. Documentation that the tanker truck has met the specifications of USEPA Method 27 shall be carried on the tanker truck. See page 17 for more information regarding the testing requirements for tanker trucks.

The December 15, 2009, proposed rules require the operator of the tanker truck to keep records of vapor tightness testing for a period of five years. The five year's worth of records must be kept on the tanker truck or you many keep only the past year's test results on the truck and the other four years at an office. The records kept offsite must be readily available to an inspector by email or facsimile. The records must include (1) name of the test, (2) tanker truck identification number, (3) test location and date, (4) tester name and signature, (5) witnessing inspector (if any), (6) vapor tightness repair, and (7) test results.

SUMMARY OF COMPLIANCE DATES

REQUIREMENTS	COMPLIANCE DEADLINES	
	NEW & RECONSTRUCTED SOURCES	EXISTING SOURCE
Emission Limitations and Management Practices (monthly throughput < 100,000 gallons) (monthly throughput > 100,000 gallons)	Upon startup of GDF By 9/23/08 - If complying with Condition 7 and startup of your GDF was from 11/9/06 to 9/23/2008. Upon startup of GDF– If complying with Condition 7 and startup of your GDF was after 9/23/08. By 1/10/08 – If not complying with Condition 7 and startup of GDF occurred before 1/10/08. Upon startup of GDF – If not complying with Condition 7 and startup occurred after 1/10/08.	By 1/10/11 By 1/10/11
Testing and Monitoring (monthly throughput > 100,000 gallons and complying with Condition 7 or 8)	At the time of installation of the vapor balance system and every three years thereafter. .	At the time of installation of the vapor balance system and every three years thereafter. By July 9, 2011- If the vapor balance system was installed on or before 12/15/09. Upon installation of the complete vapor balance system, if the vapor balance system was installed after 12/15/09.
Initial Notification (Monthly throughput >10,000 and <100,000 gallons)	By 5/9/08 or when the GDF becomes subject to the control requirements, whichever is later. If GDF is complying with the state submerged fill requirements before 1/10/08, notification not required.	By 5/9/08. If the GDF is complying with the state submerged fill requirements before 1/10/08, notification not required.

REQUIREMENTS	COMPLIANCE DEADLINES	
	NEW & RECONSTRUCTED SOURCES	EXISTING SOURCE
(Monthly throughput >100,000 gallons)	By 5/9/08 or by emission limitations and management deadlines, whichever is later. If the GDF is complying with the state vapor balance requirements before 1/10/08, notification not required.	By 5/9/08. If GDF is complying with the state vapor balance requirements before 1/10/08, notification not required.
Notification of Compliance Status		
(Monthly throughput >10,000 and <100,000 gallons)	Upon startup of the GDF. If the GDF is complying with the state submerged fill requirements before 1/10/08, notification not required.	By 1/10/11. If GDF is complying with the state submerged fill requirements before 1/10/08, notification not required.
(Monthly throughput >100,000 gallons)	Same deadlines for Emission Limitations and Management Practices up above. If GDF is complying with the state vapor balance requirements before 1/10/08, notification not required.	By 1/10/11. If GDF is complying with the state vapor balance requirements before 1/10/08, notification not required.
(Monthly throughput >10,000 and <100,000 gallons)	Within 60 days from startup. If the GDF is complying with the state submerged fill requirements before 1/10/08, notification not required.	By 3/11/11. If the GDF is complying with the state submerged fill requirements before 1/10/08, notification not required.
(Monthly throughput > 100,000 gallons)	Within 60 days of conducting initial performance tests. If GDF is complying with the state vapor balance requirements before 1/10/08, notification not required.	By 9/7/11 if the vapor balance system was installed on or before 12/15/09 and complying with Condition 7 or 8. Within 60 days from installation of the complete vapor balance system, if the vapor balance system was installed after 12/15/09 and complying with Condition 7 or 8. If GDF is complying with the state vapor balance requirements before 1/10/08 (i.e., Condition 6), notification not required.

REQUIREMENTS	COMPLIANCE DEADLINES	
	NEW & RECONSTRUCTED SOURCES	EXISTING SOURCE
Notification of Performance Testing (Monthly throughput >100,000 gallons)	60 days prior to conducting tests.	60 days prior to conducting tests.
Recordkeeping (Monthly throughput <100,000 gallons)	Beginning 1/10/08 or immediately upon startup, whichever is later.	By January 10, 2011
(Monthly throughput <100,000 gallons)	Upon startup of your GDF.	By January 10, 2008
Reporting (Monthly throughput >100,000 gallons)	Within 180 days from the completion of the performance testing.	Within 180 days from the completion of the performance testing.

WHO ENFORCES THE NESHAP?

The state of Michigan does not have delegation of the NESHAP. The USEPA is the agency enforcing the NESHAP and accepting the notifications.

STATE VAPOR BALANCE REQUIREMENTS

The requirements contained in the DNRE rules and MDA act pertaining to minimizing the release of vapors during loading and unloading of gasoline are summarized below. In addition, good operating practices are also presented for gasoline dispensing facility owners and tanker truck drivers.

GASOLINE DISPENSING FACILITIES

There are two sets of requirements enforced by two different agencies that require vapor balance systems on GDFs. The applicability of these requirements depends on where your GDF is located.

The Michigan Department of Natural Resources and Environment (DNRE) Vapor Balance Rules

GDFs located in the metropolitan areas of Flint, Lansing, and Grand Rapids must have a vapor balance system that captures displaced gasoline vapor and air by means of a vapor tight[5] collection line that returns not less than 90%, by weight, of the displaced gasoline vapor from the storage tanks to the tanker trucks. The tankers must also be vapor-tight; and be equipped, maintained, or controlled with an interlocking system or procedure to ensure that the vapor-tight collection line is connected before any gasoline can be loaded; and be equipped with a device to ensure that the vapor-tight collection line shall close upon disconnection so as to prevent the release of gasoline vapor. A vapor balance system is not required if the storage tank has less than a 2,000 gallon capacity, or if the GDF is served exclusively by a bulk plant with less than 1,000,000 gallon annual throughput.

See Appendix A for a description of the metropolitan areas and detailed maps, or access the maps at **www.michigan.gov/deqenvassistance**. Scroll down and select “Clean Air Assistance” under “Related Links,” and then select “Gasoline Distribution Facilities” under “Federal Regulations.”

The Michigan Department of Agriculture’s (MDA) Motor Fuels Quality Act 44 of 1984

The MDA’s vapor balance rule applies to GDFs located in the Southeast Michigan counties of Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne that have an annual gasoline throughput of 120,000 gallons or more.

The MDA act, like the DNRE rule, requires a vapor balance system that returns not less than 90% by weight of the displaced gasoline vapor from the storage tanks to the tanker trucks. The MDA requirements also require weekly inspections of the vapor balance equipment, keeping records of maintenance performed on file for 3 years, installing poppetted drybreak on the vapor return, equipping all open vent pipes on tanks with pressure-vacuum relief valves approved by MDA, and obtaining a dispensing permit.

FIGURE 5. GDFs located in shaded areas are subject to Michigan vapor balance requirements.

5. Vapor-tight means equipment that allows no loss of vapors. Compliance with vapor-tight requirements can be determined by checking to ensure that the concentration at a potential leak source is not equal to or greater than 100 percent of the Lower Explosive Limit when measured with a combustible gas detector, calibrated with propane, at a distance of 1 inch from the source.

Gasoline Dispensing Facility Owner's Checklist

To ensure proper operation of vapor balance equipment, the following should be checked on a regular basis:

- ✓ Drop tube collar for tightness.
- ✓ Presence of an undamaged, tight sealing gasket on fill and vapor caps.
- ✓ During loading of gasoline tanks, the vapor recovery elbow should be securely fastened to the vapor recovery adapter, and the adapter should be securely connected to the vapor recovery pipe (two-point).
- ✓ Vapor and fill caps are installed and locked on storage tanks when not being loaded.
- ✓ Pressure/Vacuum (P/V) vent caps are installed on vent pipes. (See Figure 6)
- ✓ Drain valves in the spill containment manholes should be in working order or plugged.
- ✓ Vapor recovery manhole cover and the cap on the vapor recovery adapter are recommended to be colored orange.
- ✓ Manhole covers to tanks are recommended to be colored according to American Petroleum Institute (API) standards (white – unleaded, blue – midgrade, red – premium, yellow – diesel, brown - kerosene). Additional recommendation: tag the inside of the manhole cover, possibly the cap, with the fuel type.
- ✓ Diagram of the tank's location, size, and type should be posted for the drivers to view.
- ✓ Make sure the vapor balance equipment is used for each delivery of gasoline. It is not required or diesel and kerosene.

FIGURE 6. Pressure/vacuum vent cap. Reproduced courtesy of OPW, May 2006.

All storage tank lids should fit tightly to protect against water entrance and vapor loss. If liquid is found in the spill containment manhole, gasoline dispensing facility s are required to identify the type of liquid to determine if it is a regulated waste. If the liquid is only water and the gasoline dispensing facility is connected to a city sewer system, contact the local wastewater treatment plant before discharging the water into a drain. If the gasoline dispensing facility is not connected to a city sewer, you must collect the water and handle it as a water/fuel mixture. If the liquid is a water/fuel mixture, it must be shipped off-site for recycling or disposal. If the liquid is 100 percent fuel it can be drained back into the fuel tank. Contact your DNRE, Waste program district office for more information regarding disposal. For a listing of their phone numbers, go to **www.michigan.gov/deq**. Select "Inside DEQ," "Contact DEQ," and then "district offices."

For the period between June 1 and September 15, gas must be formulated to be 7.0 pounds per square inch (psi) of pressure under the Reid vapor pressure system for all gasoline dispensing facilities located in the following eight Southeast Michigan counties: Lenawee, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw and Wayne.

TANKER TRUCKS

For vapor balance to succeed, both gasoline dispensing facility owners and tanker truck drivers must work together. Vapors recovered at the gasoline dispensing facility during unloading are carried to their final destination - the terminal, where they can be recovered.

Unloading a Tanker Truck (Dropping a Load)

As gasoline is unloaded/dropped, the vapors in the underground or aboveground storage tanks are sent into the tanker truck. When unloading is complete, the gasoline dispensing facility has a load of gasoline and the tanker truck returns to the terminal with a load of vapors (approximately 10-15 gallons of gasoline vapor per load).

Driver's Checklist at the Gasoline Dispensing facility

- ✓ Stick the tank to verify the tank's fuel capacity. (See Figure 7)
- ✓ Attach the vapor balance hose to the tanker truck and to the gasoline storage tank. The vapor balance hose should be the first hose on and the last hose off.
- ✓ Attach the fuel hose to the tanker truck and to the gasoline storage tank. (See Figure 8)
- ✓ Make sure all the connections are tight and secured and that all gaskets are in place and in good condition.
- ✓ Look, listen, and smell for liquid and vapor leaks.
- ✓ Make sure that caps are replaced on the fill adapter and vapor balance adaptor after the load is dropped.
- ✓ Report any problems to the dispensing facility owner or manager on site.
- ✓ Do not deliver gasoline to a storage tank that has damaged or dysfunctional vapor balance equipment.
- ✓ Always stay within 25 feet of the tanker truck.
- ✓ Use your vapor balance equipment at all times. Failure to use vapor balance equipment is a violation of state and federal laws. Drivers, as well as GDF owners can be held personally responsible for failing to ensure the vapor balance equipment is properly connected for each delivery of gasoline.

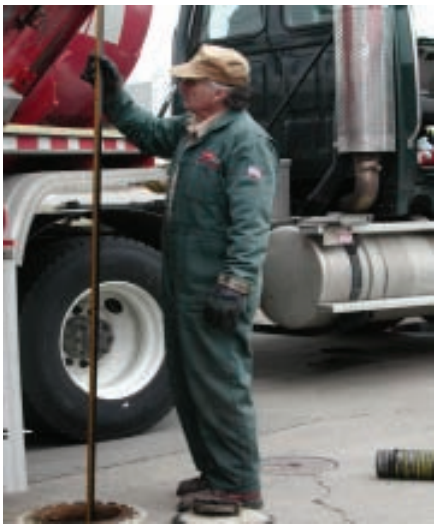


FIGURE 7. Sticking a tank to verify the tank's fuel capacity.

FIGURE 8. Dropping a load of gasoline with a dual-point connection.

Loading a Tanker Truck

As gasoline is loaded into the tanker truck at the terminal, vapors transported from the gasoline dispensing facility are displaced from the tanker into the terminal's vapor balance system.

Driver's Checklist at the Terminal

- ✓ Connect the terminal's vapor balance hose to the tanker truck. The vapor balance hose should be the first hose on and the last hose off.
- ✓ Connect the terminal's fuel hose to the tanker truck.
- ✓ Follow all specific loading instructions posted at the terminal.
- ✓ Listen for hissing or whistling, or smell for excessive vapor while loading. This may indicate leaking from the dome hatch and/or vapor vent covers. Correct any problems immediately. (See Figure 9)
- ✓ Report any problems to the terminal operator.

FIGURE 9. Dome hatch cover on tanker truck.

Tanker Truck Testing and Certification

Tanker trucks loading or unloading gasoline in Marquette County, the lower half of the Lower Peninsula of Michigan (see Figure 10), or unloading at GDFs with a monthly throughput of 100,000 or more gallons in the non-shaded counties in Figure 10, must be tested for pressure and vacuum leaks annually. The test must be conducted according to USEPA Method 27. See "Resources" on page 18 for the Web site containing Method 27.

If your tanker truck is loading or unloading in one or more of the shaded counties in Figure 10, you must submit your test results to the DNRE. See Appendix B for a form to report your test results. This form identifies what is tested on a tanker truck. The DNRE must be notified of the time and location of the test at least a week prior to conducting the test. The test results must be submitted to the DNRE within 30 days from when the test was conducted. Unless the DNRE responds back within 45 days of receipt of the results, your tanker truck will be considered certified. While transporting, tanker trucks are required to maintain a copy of valid PV test results in the vehicle.

If your tanker truck is loading or unloading only at GDFs located in the non-shaded counties in Figure 10 with a monthly throughput of 100,000 or more gallons, the tests results must be maintained on the vehicle but do not have to be submitted to the DNRE for certification purposes.

FIGURE 10. Tanker trucks delivering gasoline in the shaded counties must obtain annual certification from the DNRE.

FIGURE 11. Pressure/vacuum tests conducted on a tanker truck.

Maintenance and Routine Testing

Regularly scheduled inspections and maintenance help avoid costly penalties. Appendix C is a suggested visual self-inspection checklist. Inspect these items regularly and immediately repair or replace equipment as necessary. The tanker truck should be retested after any repairs.

Remember that violating state and/or federal law is very costly and the benefit of keeping equipment in good condition is not simply to avoid penalties, but to provide safer work conditions, a healthier environment, and greater profit.

WHERE TO GO FOR ADDITIONAL INFORMATION

For answers to questions regarding the state and federal vapor balance system requirements, please contact the EAP at 800-662-9278. The EAP has established a Web site for these requirements. Go to **www.michigan.gov/deqenvassistance**, to and select “Clean Air Assistance” under “Related Links” and then select “Gasoline Dispensing Facilities” under “Federal Regulations.”

The Web site contains links to this guide; a listing of tanker truck testing companies; the initial notification and notification of compliance form, and notification of performance testing form; acceptable testing methods for the federally required tests; and state and federal vapor balance rules.

OTHER REGULATIONS

MICHIGAN DEPARTMENT OF AGRICULTURE (MDA)

Gasoline dispensing facilities s located in Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw and Wayne counties, constructed after November 15, 1990, are required to obtain a Stage I Dispensing Permit from the Michigan Department of Agriculture. In addition, accurate records of maintenance preformed on Stage I and gasoline dispensing equipment must be maintained for three years. Please contact the MDA Motor Fuels Quality Program at 517-655-8202 for additional information.

DNRE STORAGE TANK REQUIREMENTS

When becoming compliant with federal air regulations, make sure you comply with DNRE storage tank requirements. For example, properly label the tanks with the fuel type and tank capacity, and ensure that the tank lids fit securely and that vent caps are on vent pipes, etc. Contact the EAP for more information regarding storage tank requirements at 800-662-9278.

FIRE CODES

Many local units of government adopt the national fire prevention code. Fire prevention codes pertain to the subsequent operation and maintenance of the building ensuring the prevention of fire and the protection of life from exposure to the dangers of fire and explosion. Fire marshals from municipalities conduct routine inspections ensuring compliance with the locally adopted fire prevention code. These rules are enforced by the Department of Energy, Labor and Economic Growth, Office of Fire Safety. Please contact the Office of Fire Safety at 517-241-9313. You may also contact the state fire marshal at 517-241-8847 or e-mail **statefiremarshal@michigan.gov.**

APPENDIX A

DESCRIPTION OF METROPOLITAN AREAS

DESCRIPTION OF METROPOLITAN AREAS

Note: If your gasoline dispensing facility is on the boundary road, you are considered in the metropolitan area based on the side of the street noted. For example: if your gasoline dispensing facility is in Genesee County, Grand Blanc Township, and your dispensing facility is on the *north* side of Grand Blanc Rd., you are within the metropolitan area. If your dispensing facility is on the *south* side of the road, you are <u>not</u> within the metropolitan area.

Flint Metropolitan Area

Genesee County

Burton Township
Entire Township

Clayton Township
South of "Bristol" and east of "Van Vleet Rd."

Davison Township
South of "Potter Rd." and east of "Oak Rd." and north of "Lapeer Rd."
South of "Lapeer Rd." and west of "Irish Rd." and north of "Bristol Rd."
North of "Atherton Rd." and east of "Gale Rd." and west of "Oak Rd."
West of "Henderson Rd. " and south of "Davison Rd." and north of "Interstate Hwy. 69"

Flint Township
Entire Township

Flushing Township
South of "Stanley Rd." and east of "Seymour Rd." including both sides of the road

Gaines Township
North of "Hill Rd." and east of "Van Vleet Rd."

Genesee Township
South of "Mt. Morris Rd." and east of Belsay Rd."
North of "Mt. Morris Rd." and west of "Bray Rd."
West of "Vassar Rd." and south of "Stanley Rd."

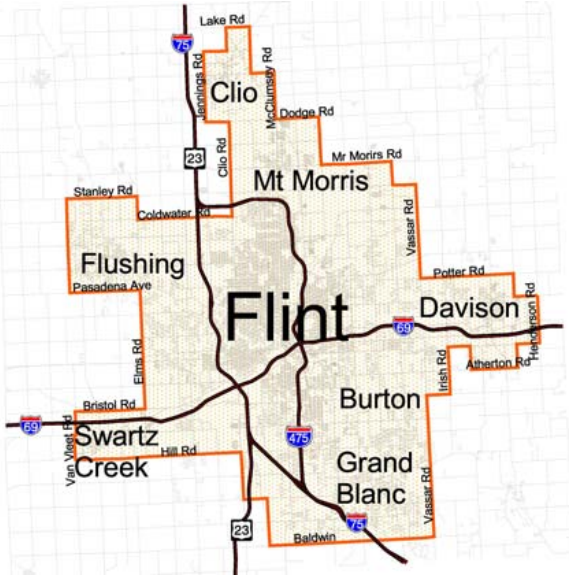
Grand Blanc Township
North of "Baldwin Rd." and west of "Vassar Rd."

Mount Morris Township
East of "Clio Rd."
South of "Coldwater Rd."

Mundy Township
North of "Hill Rd."
North of "Grand Blanc Rd." and east of "Torrey Rd."
North of "Baldwin Rd." and east of "Torrey Rd." but not including the east side of "Torrey Rd."

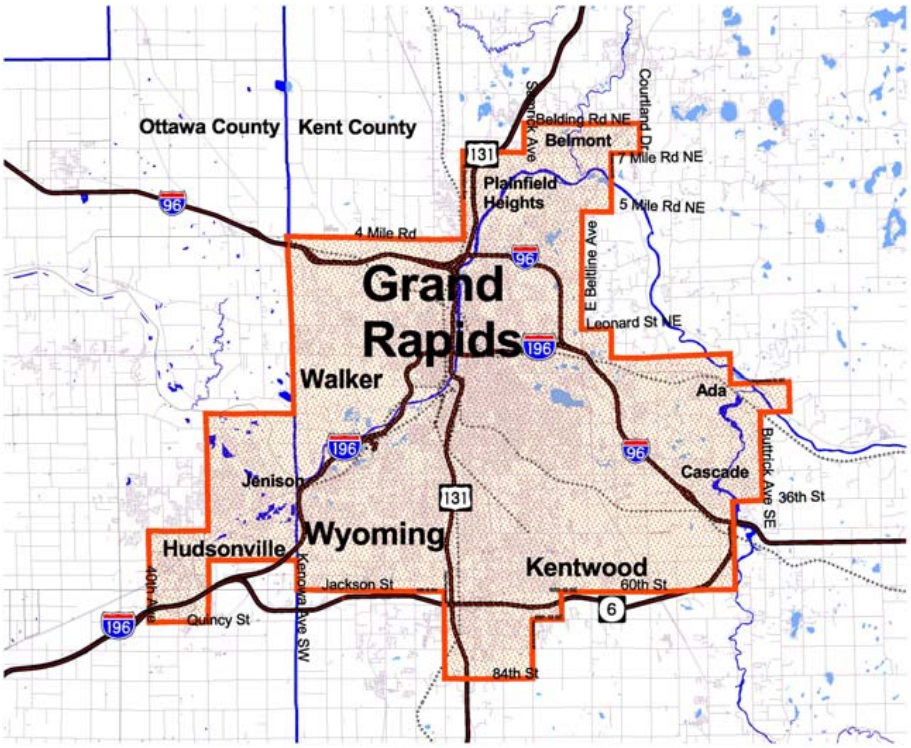
Thetford Township
South of "Dodge Rd." and west of "Bray Rd."

Vienna Township
East of "Clio Rd." and south of "State Rte 57"
East of "Clio Rd." and south of "Lake Rd." and west of "Neff Rd."
East of "Jennings Rd." and north of "Dodge Rd." and south of "Farrand Rd."



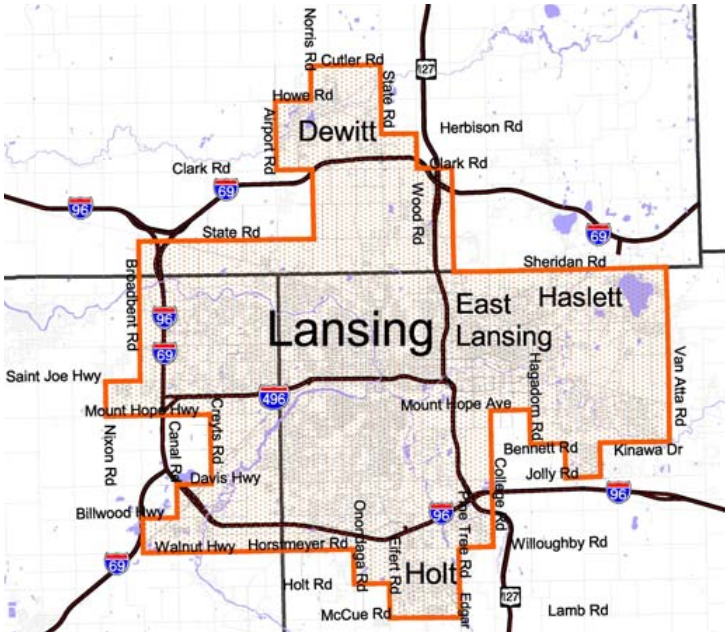
Grand Rapids Metropolitan Area

Kent County	
Ada Township South of "State Hwy 21" including both sides of the Hwy. **Byron Township** East of "Clyde Park Ave./Burr Ave." and north of "84th St." **Cascade Township** West of "Buttrick Ave" and north of "36th St." North of "60th St." and west of "Thornapple River Dr." including both sides of the Drive	**Gaines Township** North of "84th St." and west of "Kalamazoo Ave." North of "68th St." and east of "Breton Ave." **Grand Rapids Township** **ALL** Except: East of "East Beltline Ave." and north of "Leonard Ave. NE" **Plainfield Township** East of "Division Ave." and south of "7 Mile Rd." and west of "East Beltline Ave."
Ottawa County	
Georgetown Township South of "Taylor St." and east of "28th Ave." including both sides of Avenue and north of "Van Buren St." East of "40th Ave." and south of "Port Sheldon St."	**Jamestown Township** North of "Quincy St." and east of "40th Ave" and west of "24th Ave"


Ottawa County
Kent County
Belding Rd NE
Belmont
7 Mile Rd NE
Plainfield Heights
5 Mile Rd NE
4 Mile Rd
Courtland Dr
Spencer Ave
E Beltline Ave
Leonard St NE
Grand Rapids
Walker
Ada
Cascade
Buttrick Ave SE
36th St
Jenison
Wyoming
Hudsonville
Kentwood
60th St
Jackson St
Quincy St
Kenowa Ave SW
84th St
96
131
196
6

Lansing Metropolitan Area

Clinton County	
DeWitt Township South of “State Rd.” and west of “U.S. 127” West of “U.S. 127” and south of “Clark Rd.” and east of “DeWitt Rd.” North of “Clark Rd.” and west of “Wood Rd.” and south of “Herbison Rd.” North of “Herbison Rd.” and west of “Old US 27” and south of “Main St.” North of “Main St.” and west of “Old US 27” and east of “Norris Rd.”	**Watertown Township** South of “State Rd.” and east of “Forest Hill Rd.”
Eaton County	
Delta Township East of “Broadbent Rd.” and north of “Mt. Hope Hwy.” East of “Creyts Rd.” East of “Nixon Rd.” and south of “St. Joe Hwy.” and north of “Mt. Hope Hwy.”	**Windsor Township** East of “Canal Rd.” and north of “Dimondale Hwy.”
Ingham County	
Delhi Township North of “Willoughby Rd.” North of “Holt Rd.” and east of “Washington Rd.” and west of “Pine Tree Rd.” **Lansing Township** Entire Township	**Meridian Township** North of “Mt. Hope Rd.” and west of “Van Atta Rd.” North of “Bennet Rd.” and east of “Hagadorn Rd.” and west of “Van Atta Rd.” Both sides of “Okemos Rd.” north of “Jolly Rd.”



APPENDIX B

GASOLINE TANK TRUCK PRESSURE/VACUUM
TEST RESULTS

GASOLINE TANKER TRUCK PRESSURE/VACUUM TEST RESULTS

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

TANKER TRUCK OWNER: _____ TANKER TRUCK SERIAL #: _____

ADDRESS: _____ UNIT #: _____

_____ MAKE/YEAR OF MFG: _____

CONTACT: _____ TELEPHONE #:_____

PRESSURE TEST RESULTS

RUN	INITIAL READING (INCHES OF WATER)	STARTING TIME	FINAL READING (INCHES OF WATER)	FINISHING TIME	REPAIRS MADE
1					
2					
3					

VACUUM TEST RESULTS

RUN	INITIAL READING (INCHES OF WATER)	STARTING TIME	FINAL READING (INCHES OF WATER)	FINISHING TIME	REPAIRS MADE
1					
2					
3					

INTERNAL VAPOR VALVE TEST

RUN	INITIAL READING (INCHES OF WATER)	STARTING TIME	FINAL READING (INCHES OF WATER)	FINISHING TIME	REPAIRS MADE
1					
2					
3					

I certify that this gasoline delivery vessel tanker has been tested in accordance with U. S. EPA Method 27 and found to be in compliance with the pressure, vacuum and internal vapor valve test requirements of Michigan Air Pollution Control Rule 627, Public Act 451 of 1994, as amended.

Name of Testing Firm:	Individual Conducting Test:
Address:	Signature:
City:	Phone Number:
State: Zip:	Date of Test:

Mail completed form to: Air Quality Division, MDNRE, P.O. Box 30260, Lansing, MI 48909-7760

MDNRE USE ONLY

Testing Observed By:	Date Received:
Results Reviewed By:	Results in Compliance?: Yes ☐ No ☐

APPENDIX C

STAGE I COMPLIANCE CHECKLIST – TANKER TRUCK DRIVERS

STAGE I COMPLIANCE CHECKLIST – TANKER TRUCK DRIVERS

Tanker Truck Serial #:_____

Month: _____ Year: _____	Acceptable Inspection?	Repair Date	Description of Repair
Is the pressure/vacuum test paperwork kept in the tanker truck?	☐ Yes ☐ No		
Are the dome cover gaskets and seals in good condition?	☐ Yes ☐ No		
Are the dome base rings in good condition?	☐ Yes ☐ No		
Are the vapor vent covers and hoses in good condition?	☐ Yes ☐ No		
Is the vapor recovery piping in good condition?	☐ Yes ☐ No		
Are the vapor and liquid transfer hoses in good condition?	☐ Yes ☐ No		
Are the rollover rails in good condition (inspect for cracks)?	☐ Yes ☐ No		
Is the tanker truck in good condition (inspect for other signs of fuel leakage)?	☐ Yes ☐ No		